Case Report

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Pathology Section

Cytomorphologic Attributes of Epithelial Myoepithelial Carcinoma of Nasal Cavity - A Rare Tumor with Unusual Clinical Presentation

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ABSTRACT

Epithelial-Myoepithelial Carcinoma (EMC) is a rare low grade epithelial malignancy of major Salivary Glands (SG). Though the histomorphology of this tumor is distinct, unusual location and clinical presentation may pose diagnostic difficulties especially when this lesion is first encountered at cytology. We report a case of 60-year-old female presenting with nasal obstruction of three months duration. At FNAC the diagnosis of EMC was suggested and it was confirmed on histopathology. We present this case highlighting the cytomorphologic attributes of this rare tumor occurring at an extremely uncommon location – Nasal cavity.

Keywords: Fine needle aspiration cytology, Nose, Salivary gland carcinoma

CASE REPORT

A 60-year-old woman presented with right sided nasal obstruction and epistaxis for three months. She complained of swelling in the right side of the face, diminution of vision in right eye and headache since last 15 days. The swelling was insidious, slowly progressive without any alleviating or relieving factor. History of pain, loss of appetite and weight loss was elicited. Pain was radiating to the right forehead. There was no history of fever, trauma or vomiting. On clinical examination, mild diffuse swelling was noted in the dorsum of the nose, more on right side measuring 3 cm across extending from midline to 1 cm of right zygomatic arch laterally and from lower orbital margin to right canine fosse inferiorly. Root of the nose, lip, columella and ala were normal. The swelling was tender. Overlying skin was unremarkable. It was firm to hard in consistency. There was no history of hypertension or diabetes and she did not reveal any history of major surgery or illness in the past. A clinical diagnosis of osteoma was suggested. CT scan revealed a mass in the right nasal cavity with erosion of the nasal bone and multiple cannon ball opacities in both lungs suggestive of a primary in the nasal cavity with metastasis to lung. Fine Needle Aspiration Cytology (FNAC) was performed by standard technique from the nose.

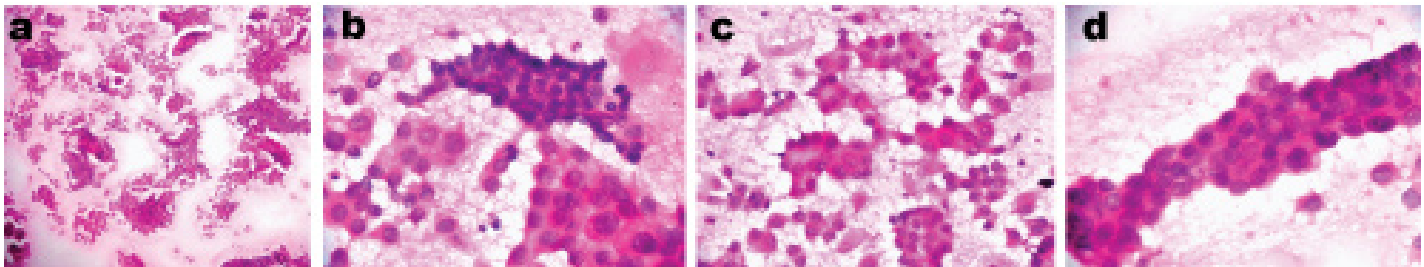
Cytology smears were highly cellular and showed a biphasic pattern [Table/Fig-1a]. The predominant component comprised of tumor cells arranged in sheets, clusters, tubular pattern and in pseudo papillary pattern [Table/Fig-1b&c]. These cells (myoepithelial nature) had abundant clear to pale vacuolated cytoplasm, high N:C ratio, round nucleus and prominent nucleoli. Mild anisonucleosis was noted. Another component was scanty and composed of tumor cells in tight sheets with abundant dense eosinophilic cytoplasm [Table/Fig-1d]. Background showed eosinophilic basement membrane material. A diagnosis of epithelial myoepithelial carcinoma was suggested and a biopsy was requested for confirmation.

The histopathology the sections showed tumor cells arranged predominantly in tubular pattern, at places forming coalesced tubules with occasional glandular structures and few papillary and cribriform areas. At places trabeculae, sheets, clusters were noted. The tumor cells were separated by abundant hyalinized stroma [Table/Fig-2a,b]. The predominant tumor cells were abluminal (myoepithelial) in nature. These were large, with clear cytoplasm and central round nucleus with moderate degree of pleomorphism, hyperchromatic nuclei and prominent nucleoli [Table/Fig-2c&d]. Many of the tubules showed stratification. A few of the tubules showed luminal (epithelial) cuboidal cells which had bland chromatin and abundant eosinophilic cytoplasm [Table/Fig-3]. Occasional tubules showed eosinophilic material in the lumen. Focally stroma showed inflammatory cell infiltrate comprising of neutrophils, lymphocytes and mast cells. At one focus the tumor cells were seen extending into the skeletal muscle bundles. Patient was referred to higher centre where he underwent radiotherapy and was lost for follow up later.

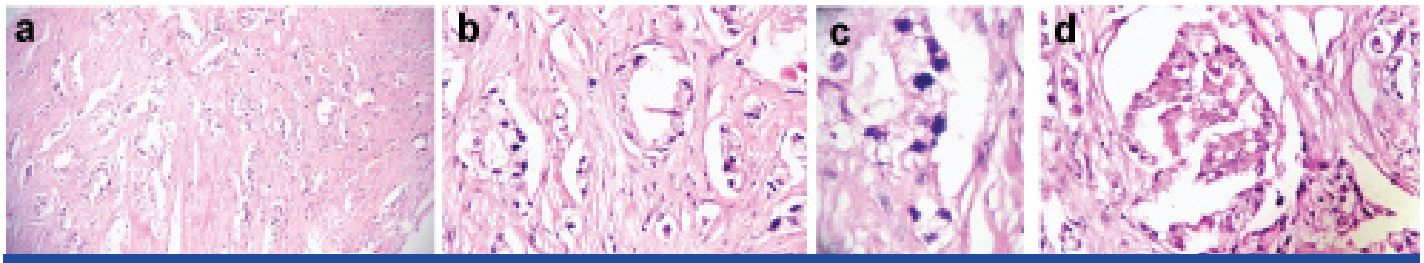
DISCUSSION

EMC is a rare low grade malignant tumor of major SG accounting for 1% of SG tumors [1]. Rarely EMC occurs at other sites of seromucinous gland localization, like trachea, bronchus, lacrimal gland, breast, nasal cavity and paranasal sinuses.

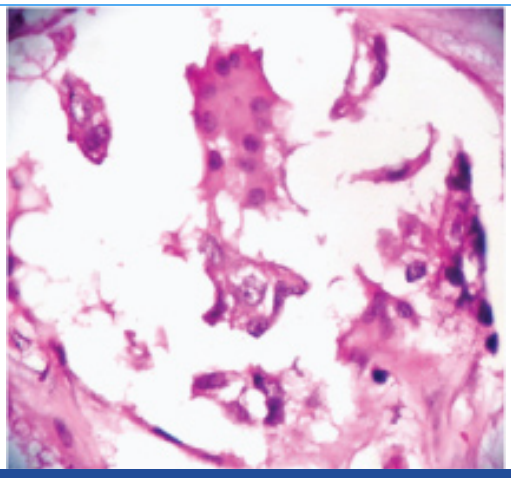
Flam et al., did a literature search of the previous cases of EMC of the nasal cavity, and found only nine published cases, which indicated that EMC had thus far been described as presenting only



[Table/Fig-1]: (a) Cytology smear showing high cellularity and biphasic nature H & E x 40}. **(b)** Cytology smear showing both epithelial and myoepithelial component. Myoepithelial cells - clear to pale vacuolated cytoplasm, high N:C ratio, round nucleus and prominent nucleoli. (H&E × 400). **(c)** Cytology smear showing acinar pattern. (H&E × 400). **(d)** Cytology smear showing sheet of epithelial cells - tumor cells in tight sheets with abundant dense eosinophilic cytoplasm. (H&E × 400).



[Table/Fig-2]: (a) Section shows abluminal clear myoepithelial cells in a sclerotic background. (H&E × 100). **(b)** Section shows high power view of 2a. These cells are large, with clear cytoplasm and central round nucleus with moderate degree of pleomorphism, hyperchromatic nuclei. (H & E, × 400). **(c)** Section shows nuclear atypia in the abluminal cells. (H&E × 400). **(d)** Section depicts cribriform pattern. (H&E × 400).



[Table/Fig-3]: Section shows epithelial component which are cuboidal cells having bland chromatin and abundant eosinophilic cytoplasm. (H&E × 400).

Tumor	Diagnostic clues
Adenoid cystic carcinoma	Angulated, hyper chromatic nucleus with nuclear molding
Polymorphous low-grade adenocarcinoma, and	Variable pattern composed of tubules/acini, papillae formation and overall bland nuclei
Cellular pleomorphic adenoma	Presence of chondro hyaline myxoid ground substance with fibrillar appearance along with monomorphic round to oval plasmacytoid cells with bland nuclei
Epithelio myoepithelial carcinoma	Biphasic pattern of ductal and myoepithelial cells. Ductal cells – clusters, sheets, acini Myoepithelial cells – Predominantly clear Basement membrane material in the background

[Table/Fig-4]: Differentiating cytomorphologic features of the tumors mimicking EMC.

with nasal symptoms [2]. Eight out of these nine cases presented with nasal symptoms, as nasal obstruction and or epistaxis. Only in one case the patient presented with epiphora. In our case the mode of presentation was nasal obstruction accompanied by swelling of the face and diminution of the vision. In the nasal cavity the tumor arises from the septum, inferior turbinate or lateral nasal sidewall. Very rarely EMC has been reported to involve bilateral maxillary sinuses [3]. EMC can cause destruction of the nasal or facial bone, affirming its low grade behaviour.

SG lesions are heterogeneous in nature and exhibit diverse morphology. Due to considerable overlap of cytomorphologic features, identifying EMC at cytology poses several challenges to the pathologist [4]. Literature search revealed few case reports describing cytology findings in EMC [5-8]. At FNAC, EMC shows a bimodal population of epithelial and myoepithelial cells. The appearance is usually myriad depending on the predominance of any of the two components. Many a times, myoepithelial cells, in virtue of their fragile cytoplasm, appear as bare nuclei in the background. As a result, the biphasic pattern is masked off. The hyaline basement material surrounding the tubules in histology appears as hyaline globules or eosinophilic matrix material in cytology [5,6]. This can be seen in other tumors like adenoid cystic carcinoma, polymorphous low grade adenocarcinoma and pleomorphic adenoma [9]. In a study by Arora SK et al., all the four cases of EMC were missed at cytology, three being wrongly diagnosed as pleomorphic adenoma and one as epithelial myoepithelioma [10]. However, close attention to the cellular details aid in the accurate diagnosis. Along with the biphasic pattern, three dimensional clusters, tubule formation, prominent nucleoli and acellular hyaline material serve as important clues to the diagnosis of EMC [9]. The differential diagnostic features of various lesions mimicking EMC at cytology have been discussed in [Table/Fig-4].

Though histology is characterized by the classic biphasic pattern, many a times solid proliferation of myoepithelial clear cells predominate [11]. Multiple serial sectioning is advocated to demonstrate the epithelial cells amidst these myoepithelial cells [12]. In the present case too, clear cells were profound in number forming sheets and ducts. Clearing represents glycogen content in the cells and is Periodic Acid Schiff (PAS) positive. Only few ducts had epithelial cells facing the luminal surface. The cells demonstrate only mild to moderate atypia. The stroma was extensively hyalinized and at places fibrotic. Mitosis and necrosis are usually lacking in keeping with the low grade nature. However, EMC can undergo aggressive transformation, 22 such cases have been reported in the literature [13]. The transformation can be abrupt or gradual wherein it is designated as dedifferentiated or myoepithelial anaplasia respectively. Histologically such forms demonstrate extensive atypia, mitosis and necrosis [14]. Though majority of these high grade lesions tend to occur in major SG, Park JO et al., reported a single case of an aggressive form of EMC occurring in the nasal cavity [15].

EMC originates from stem cells capable of dual differentiation along both the epithelial and myoepithelial lineage [16]. Immunohistochemistry supports the bidirectional demarcation by selectively accentuating the epithelial and myoepithelial component by cytokeratin and p63, calponin, S100 and smooth muscle actin respectively. EMC by itself is a low grade malignancy and the recurrence rate and metastasis account for 23 to 80% and 14 to 25% respectively. Most surgeons opt for wide excision with clear margins followed by radiotherapy in selected cases to avoid recurrence. Chemotherapy has not been used in EMC except by Pierard et al., who proposed its use in stabilization of pulmonary metastasis in these cases [17].

CONCLUSION

EMC of nasal cavity presents as a complex challenge to the clinicians and Pathologist. The possibility of EMC in a nasal mass should be suspected by a cytopathologist in presence of biphasic pattern with clear cell predominance and judiciously confirmed by histopathology and immunohistochemistry. Better understanding of its cytomorphologic features will help make accurate preoperative diagnosis, favoring selection of appropriate management practice.

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